

Comprehensive Amendment to the Fishery Management Plans (FMPs) of the U.S. Caribbean to Address Required Provisions of the Magnuson-Stevens Fishery Conservation and Management Act:

- **Amendment 2 to the FMP for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Islands**
- **Amendment 1 to FMP for the Queen Conch Resources of Puerto Rico and the U.S. Virgin Islands**
- **Amendment 3 to the FMP for the Reef Fish Fishery of Puerto Rico and the U.S. Virgin Islands**
- **Amendment 2 to the FMP for the Corals and Reef Associated Invertebrates of Puerto Rico and the U.S. Virgin Islands**

Including Supplemental Environmental Impact Statement, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

24 May 2005

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Abbreviations and Acronyms

allowable biological catch (ABC)	(NOAA)
advisory panel (AP)	National Standard (NS)
biological opinion (BO)	National Standard Guideline (NSG)
biomass (B)	natural mortality rate (M)
carapace length (CL)	optimum yield (OY)
catch (C)	Paperwork Reduction Act (PRA)
catch per unit effort (CPUE)	Puerto Rico (PR)
Caribbean Fishery Management Council (CFMC)	Regulatory Flexibility Act (RFA)
Code of Federal Regulations (CFR)	regulatory impact review (RIR)
draft environmental impact statement (DEIS)	Southeast Data Assessment and Review
Division of Fish and Wildlife – U.S. Virgin Islands (DFW)	(SEDAR)
Department of Natural and Environmental Resources–Puerto Rico (DNER)	Southeast Fisheries Science Center (SEFSC)
Economic Assessment (EA)	Southeast Regional Office (SERO)
Endangered Species Act (ESA)	spawning potential ratio (SPR)
environmental impact statement (EIS)	spawning stock biomass (SSB)
essential fish habitat (EFH)	standard length (SL)
exclusive economic zone (EEZ)	supplemental environmental impact statement (SEIS)
Federal Register (FR)	Sustainable Fisheries Act (SFA)
final environmental impact statement (FEIS)	submerged aquatic vegetation (SAV)
final supplemental environmental impact statement (FSEIS)	The World Conservation Union (IUCN)
fishery management plan (FMP)	total allowable catch (TAC)
fishery management unit (FMU)	total length (TL)
fishing mortality (F)	U.S. Virgin Islands (USVI)
fork length (FL)	
habitat area of particular concern (HAPC)	
highly migratory species (HMS)	
Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)	
Marine Mammal Protection Act (MMPA)	
Marine Recreational Fisheries Statistical Survey (MRFSS)	
maximum fishing mortality threshold (MFMT)	
maximum sustainable yield (MSY)	
minimum stock size threshold (MSST)	
National Environmental Policy Act (NEPA)	
National Marine Fisheries Service (NMFS)	
National Marine Fisheries Service Southeast Regional Office (SERO)	
National Oceanic and Atmospheric Administration	

Supplemental Environmental Impact Statement (SEIS) Cover Sheet

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Title of Proposed Action:

Comprehensive Amendment to the Fishery Management Plans of the U.S. Caribbean to Address Required Provisions of the Magnuson-Stevens Fishery Conservation and Management Act

Status of SEIS:

Draft

Final

Abstract:

The Caribbean Fishery Management Council (Council) developed the SEIS contained in this integrated fishery management plan (FMP) amendment to inform the public of its decisions about how best to address the required provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) in federal fisheries of the U.S. Caribbean, while achieving the objectives of the Council's Spiny Lobster, Queen Conch, Reef Fish, and Coral FMPs. The SEIS describes and evaluates the biological, ecological, social, economic, and administrative impacts associated with a wide range of alternatives for: defining fishery management units and sub-units; specifying biological reference points and stock status determination criteria; regulating fishing mortality; rebuilding overfished fisheries; conserving and protecting yellowfin grouper; and achieving the MSFCMA bycatch mandates.

Also incorporated into this FMP amendment are the preferred alternatives to describe and identify essential fish habitat (EFH) and habitat areas of particular concern (HAPC), and to minimize to the extent practicable the adverse effects of fishing on EFH. These alternatives were developed and evaluated in the FEIS for the Generic EFH Amendment to the FMPs of the U.S.

Caribbean (CFMC 2004). The notice of availability of the Record of Decision associated with the Generic EFH FEIS was published in the *Federal Register* on May 25, 2004 (69 FR 29693).

The notice of intent to develop an SEIS in association with this amendment was published in the *Federal Register* on May 31, 2002 (67 FR 38060). Section 11.3 (Appendix B) lists the dates and locations of scoping meetings and public hearings. The availability of the DSEIS was announced in the *Federal Register* March 18, 2005 (70 FR 13189), with a comment period ending May 2, 2005.

Comments and Response to DSEIS

No substantive comments were received during the comment period on the DSEIS. The Environmental Protection Agency (EPA) concluded the proposed project alternatives would not result in significant environmental impacts. The U.S. Geological Survey reviewed the document and had no comments.

The USVI Department of Planning and Natural Resources, Division of Fish and Wildlife submitted comments following the Council's May 2005 meeting, and after the close of the comment period on the DSEIS. The FSEIS/amendment already addresses the many editorial suggestions, and attempts to address several of the more substantive comments. Many of the comments simply noted that the EIS lacked citation to more recent published and unpublished reports. Analyses needed to be complete for the Council to be able to make informed decisions on the various alternatives. Although these new studies would provide additional information for this document, they do not appear to provide a basis for reaching different conclusions than those presented in the current version of the FSEIS/amendment. NOAA Fisheries National Standards Guidelines, at 50 C.F.R. § 600.315(b)(2), provide that "FMPs must take into account the best scientific information available at the time of preparation. Between the initial drafting of an FP and its submission for final review, new information often becomes available. This new information should be incorporated into the final FMP where practicable; but it is unnecessary to start the FMP process over again, unless the information indicates that drastic changes have occurred in the fishery that might require revision of the management objectives or measures." The newer information does not appear to indicate drastic changes have occurred in any of the fisheries, and in light of the litigation deadline for the EFH provisions, and the affected public's interest in the measures in this FSEIS/amendment, NOAA Fisheries finds it is not practicable to incorporate the newer information into the document at this time.

1 Summary

This comprehensive amendment includes a final supplemental environmental impact statement (FSEIS), which examined the impacts of amending the FMPs of the Caribbean Fishery Management Council (Council) to comply with several provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) related to establishing biological reference points and stock status determination criteria, preventing overfishing and rebuilding overfished fisheries, and assessing and minimizing to the extent practicable bycatch. Federal fisheries in the U.S. Caribbean are managed under four FMPs: (1) the Spiny Lobster FMP, (2) the Queen Conch FMP, (3) the Reef Fish FMP, and (4) the Coral FMP. This integrated document is intended to supplement the existing EISs contained within those FMPs .

The alternatives address four MSFCMA provisions: (1) Assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, fisheries (MSFCMA §303(a)(3)); (2) Specify objective and measurable criteria for identifying when a fishery is overfished (MSFCMA §303(a)(10)); (3) End overfishing and rebuild overfished stocks, and prevent overfishing in fisheries that are identified as approaching an overfished condition (MSFCMA §304(e)(3)); and (4) Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery and implement conservation and management measures that minimize bycatch and bycatch mortality to the extent practicable (MSFCMA §303(a)(11)).

This amendment also includes the preferred alternatives to describe and identify EFH for managed stocks, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat. These alternatives were developed and evaluated in the FEIS for the Generic EFH Amendment to the FMPs of the U.S. Caribbean (CFMC 2004) in the context of the EFH mandates of the MSFCMA (§303(a)(7)). This integrated FMP summarizes and incorporates by reference the findings and conclusions of the FEIS for the Generic EFH Amendment to the FMPs of the U.S. Caribbean (EFH EIS).

1.1 Description of alternatives

The range of alternatives considered by the Council to address the MSFCMA requirements are described in Section 4.0 and summarized in Table 1. These alternatives are organized under seven general categories of actions: (1) Defining fishery management units (FMUs) and sub-units (Section 4.1), (2) Specifying biological reference points and stock status determination criteria (Section 4.2), (3) Regulating fishing mortality (Section 4.3), (4) Rebuilding overfished fisheries (Section 4.4), (5) Conserving and protecting yellowfin grouper (Section 4.5), (6) Achieving the MSFCMA bycatch mandates (Section 4.6), and (7) Achieving the MSFCMA EFH mandates (Section 4.7); the reasonable range of alternatives considered to achieve the MSFCMA EFH mandates can be found in Sections 2.3 - 2.5 of the EFH EIS. Additional alternatives considered to address the MSFCMA requirements, but ultimately rejected without detailed study, are presented in Section 11.0 of this amendment and Section 2.6 of the EFH EIS, along with the rationale for their rejection.

Table 1. Alternatives considered in this integrated FMP amendment to achieve the defined purpose and need. The preferred alternatives, where defined, are identified with an X. The acronym “AT” stands for aquarium trade species. The acronym “AO” stands for all other species in the FMU.

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
DEFINING FISHERY MANAGEMENT UNITS AND SUB-UNITS							
Defining FMUs and Sub-Units							
Alternative 1: No action. Retain the current FMUs designated by the original FMPs.							
Alternative 2: Redefine the FMUs and FMU sub-units in Council FMPs as detailed in Table 8. Delete from the Caribbean Conch Resource FMU the Caribbean helmet, <i>Cassia tuberosa</i> ; Caribbean vase, <i>Vasum muricatum</i> ; flame helmet, <i>Cassia flammea</i> ; and whelk (West Indian top shell), <i>Cittarium pica</i> , leaving nine other species detailed in Table 2.	X	X	X	X	X	X	X
Alternative 3: With the exception of the aquarium trade species sub-units in the Coral and Reef Fish FMPs, redefine the FMUs and FMU sub-units in Council FMPs to be consistent with those specified in Table 8. Redefine the aquarium trade species sub-units to comprise those aquarium trade species recognized and managed by state governments, and that are not otherwise included in other sub-units of any FMU.							
Alternative 4: Delete the aquarium trade species from the Caribbean reef fish resource FMU.							
Additional Options for Aquarium Trade Species							
Alternative 1: No action. Continue to manage aquarium trade species.							
Alternative 2: Move aquarium trade species from a management to a data collection only category.	X				X		
Additional Options for Caribbean Conch Resources							
Alternative 1: No action. Continue to manage Caribbean conch resources.							
Alternative 2: Move all species in the Caribbean conch resource FMU, with the exception of queen conch, from a management to a data collection only category.				X			
SPECIFYING BIOLOGICAL REFERENCE POINTS AND STOCK STATUS DETERMINATION CRITERIA							
Maximum Sustainable Yield (MSY)							
Alternative 1: No action. Retain the current definitions of MSY (if any).							
Alternative 2: In the absence of MSY estimates, the proxy for MSY will be derived from recent average catch (C), and from estimates of the current biomass (B_{CURR}/B_{MSY}) and fishing mortality (F_{CURR}/F_{MSY}) ratios as: $MSY = C / [(F_{CURR}/F_{MSY}) \times (B_{CURR}/B_{MSY})]$; where C is calculated based on commercial landings for the years 1997-2001 for Puerto Rico and 1994-2002 for the USVI, and on recreational landings for the years 2000-2001.			X		X		X
Alternative 3: Set MSY = 0.		X					
Alternative 4: Set MSY equal to long-term average catch based on commercial landings data from 1983-2001 and on recreational data provided by MRFSS for the years 2000-2001.							

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
Fishing Mortality (F) and Biomass (B) Ratios							
Alternative 1: No action. Do not define F and B ratios for managed stocks.							
Alternative 2: For each FMU sub-unit for which B_{CURR}/B_{MSY} and F_{CURR}/F_{MSY} have not been estimated through a stock assessment or other scientific exercise (i.e., stock status unknown), the following estimates will be used for the B_{CURR}/B_{MSY} and F_{CURR}/F_{MSY} proxies: 1) For species that are not believed to be at risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 0.75 and the B_{CURR}/B_{MSY} proxy is estimated as 1.25; 2) For species for which no positive or negative determination can be made on the status of their condition, the default proxies for F_{CURR}/F_{MSY} and B_{CURR}/B_{MSY} are estimated as 1.00; and 3) For species that are believed to be at risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 1.50 and the B_{CURR}/B_{MSY} proxy is estimated as 0.75.		X	X			X	X
Alternative 3: For each FMU sub-unit for which B_{CURR}/B_{MSY} and F_{CURR}/F_{MSY} have not been estimated through a stock assessment or other scientific exercise (i.e., stock status unknown), the following estimates will be used for the B_{CURR}/B_{MSY} and F_{CURR}/F_{MSY} proxies: 1) For species that are not believed to be at risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 0.75 and the B_{CURR}/B_{MSY} proxy is estimated as 1.25; 2) For species for which no positive or negative determination can be made on the status of their condition, the default proxies for F_{CURR}/F_{MSY} and B_{CURR}/B_{MSY} are estimated as 1.00; and 3) For species that are believed to be at risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 1.50 and the B_{CURR}/B_{MSY} proxy is estimated as 0.50.							
Alternative 4: For each FMU sub-unit for which B_{CURR}/B_{MSY} and F_{CURR}/F_{MSY} have not been estimated through a stock assessment or other scientific exercise (i.e., stock status unknown), the following estimates will be used for the F_{CURR}/F_{MSY} and B_{CURR}/B_{MSY} proxies: 1) The default proxies for F_{CURR}/F_{MSY} and B_{CURR}/B_{MSY} are estimated as 1.00; 2) For species that are believed to be at risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 1.33 and the B_{CURR}/B_{MSY} proxy = $\max(1-c)$, whereas c is equal to the natural mortality rate (M) or 0.50, whichever is smaller; and 3) For species that are believed to be at high risk based on the best available information, the F_{CURR}/F_{MSY} proxy is estimated as 2.0 and the B_{CURR}/B_{MSY} proxy = $0.67(1-c)$, whereas c is equal to the natural mortality rate (M) or 0.50, whichever is smaller.							
Optimum Yield (OY)							
Alternative 1: No action. Retain current definitions of OY (if any).							
Alternative 2: Set OY = 0.75(MSY).							
Alternative 3: Set OY = 0.		X					
Alternative 4: Set OY equal to the average yield associated with fishing on a continuing basis at F_{OY} ; where $F_{OY} = 0.75F_{MSY}$.			X			X	X
Minimum Stock Size Threshold (MSST)							
Alternative 1: No action. Do not define MSST for managed species.							
Alternative 2: Set MSST = $B_{MSY}(1-c)$; where c = the natural mortality rate (M) or 0.50, whichever is smaller.		X	X			X	X
Alternative 3: Set MSST = $B_{MSY}(0.50)$.							
Alternative 4: Set MSST = B_{MSY} .							
Maximum fishing mortality threshold (MFMT), and limit and target control rules.							
Alternative 1: No action. Do not define MFMT or control rules for FMU sub-units.							

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
<p>Alternative 2:</p> <p>A) Specify an MSY control rule to define MFMT and ABC as follows: 1) If $B_{CURR}/B_{MSY} < B_{MIN}$, then $ABC = 0$; 2) If $B_{CURR}/B_{MSY} \geq 1$, then $ABC = MSY$; and 3) If B_{CURR}/B_{MSY} is between B_{MIN} and 1, then $ABC = (MSY/(1-B_{MIN}))((B_{CURR}/B_{MSY})-B_{MIN})$; where $B_{MIN} = 0.25$; and</p> <p>B) Specify an OY control rule representing target catch levels such that: 1) If $B_{CURR}/B_{MSY} < B_{MIN}$, then target catch levels = 0; 2) If $B_{CURR}/B_{MSY} \geq 1$, then target catch levels = OY; and 3) If B_{CURR}/B_{MSY} is between B_{MIN} and 1, then target catch levels = $(OY/(1-B_{MIN}))((B_{CURR}/B_{MSY})-B_{MIN})$; where $B_{MIN} = 0.25$.</p>							
<p>Alternative 3:</p> <p>A) Specify an MSY control rule to define MFMT and ABC as 0; and</p> <p>B) Specify an OY control rule to define target catch levels as 0.</p>		X					
<p>Alternative 4:</p> <p>A) Specify an MSY control rule to define MFMT and ABC as follows: 1) If $B_{CURR}/B_{MSY} < B_{MIN}$, then $ABC = 0$; 2) If $B_{CURR}/B_{MSY} \geq 1$, then $ABC = F_{MSY}(B)$; and 3) If B_{CURR}/B_{MSY} is between B_{MIN} and 1, then $ABC = (F_{MSY}(B)/(1-B_{MIN}))((B_{CURR}/B_{MSY})-B_{MIN})$; where $B_{MIN} = 0.25$. If F_{MSY} cannot be estimated directly, use M as a proxy; and</p> <p>B) Specify an OY control rule to define target catch levels such that: 1) If B_{CURR}/B_{MSY} is less than B_{MIN}, then target catch levels = 0; 2) If B_{CURR}/B_{MSY} is equal to or greater than 1, then target catch levels = $F_{OY}(B)$; and 3) If B_{CURR}/B_{MSY} is between B_{MIN} and 1, then target catch levels = $(F_{OY}(B)/(1-B_{MIN}))((B_{CURR}/B_{MSY})-B_{MIN})$; where $B_{MIN} = 0.25$. If F_{OY} cannot be estimated directly, use 0.5(M) as a proxy.</p>							
<p>Alternative 5:</p> <p>A) Specify an MSY control rule to define MFMT and ABC as follows: 1) If $B_{CURR}/B_{MSY} < MSST/B_{MSY}$, $ABC = 0.33MSY$; 2) If $B_{CURR}/B_{MSY} \geq 1$, $ABC = MSY$; and 3) If B_{CURR}/B_{MSY} is between $MSST/B_{MSY}$ and 1, $ABC = 0.67MSY$; and</p> <p>B) Specify an OY control rule to define target catch levels such that: 1) If $B_{CURR}/B_{MSY} < MSST/B_{MSY}$, target catch levels = $0.25MSY$; 2) If $B_{CURR}/B_{MSY} \geq 1$, target catch levels = $0.75MSY$; and 3) If B_{CURR}/B_{MSY} is between $MSST/B_{MSY}$ and 1, target catch levels = $0.5MSY$.</p>							
<p>Alternative 6:</p> <p>A) Specify an MSY control rule to define $ABC = F_{MSY}(B)$. When the data needed to determine F_{MSY} are not available, use natural mortality (M) as a proxy for F_{MSY}; and</p> <p>B) Specify an OY control rule to define target catch limits such that they equal $F_{OY}(B)$. If F_{OY} can not be determined, use 0.5(M) as a proxy.</p>			X			X	X

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
<p>Alternative 7.</p> <p>A) Specify an MSY control rule to define $ABC = F_{MSY}(B)$. When the data needed to determine F_{MSY} are not available, use a proxy for F_{MSY} calculated as a fraction of the natural mortality rate (M) as follows: 1) Use $1.00(M)$ as a proxy for F_{MSY} for species that are not believed to be at risk based on the best available information; 2) Use $0.75(M)$ as a proxy for F_{MSY} for species for which no positive or negative determination can be made on the status of their condition; and 3) Use $0.50(M)$ as a proxy for F_{MSY} for species that are believed to be at risk based on the best available information; and</p> <p>B) Specify an OY control rule to define target catch levels equal to $F_{MSY}(B)(OY/MSY)$. When the data needed to determine F_{MSY} are not available, use a proxy for F_{MSY} calculated as a fraction of the natural mortality rate (M) as follows: 1) Use $0.75(M)$ as a proxy for F_{MSY} for species that are not believed to be at risk based on the best available information; 2) Use $0.50(M)$ as a proxy for F_{MSY} for species for which no positive or negative determination can be made on the status of their condition; and 3) Use $0.25(M)$ as a proxy for F_{MSY} for species that are believed to be at risk based on the best available information.</p>							

REGULATING FISHING MORTALITY

Short-term management alternatives							
Alternative 1: No action. Do not adopt additional management measures.							
Alternative 2: Establish seasonal closures.						X	
Alternative 3: Establish area closures.							
Alternative 4: Eliminate the use of fish traps in the U.S. EEZ.							
Alternative 5: Eliminate the use of gill and trammel nets in the U.S. EEZ.						X	
Alternative 6. Develop a memorandum of understanding (MOU) between NMFS and the state governments to develop compatible regulations to achieve the management objectives set forth in all Council FMPs in state and federal waters of the U.S. Caribbean							

REBUILDING OVERFISHED FISHERIES

Nassau Grouper (Rebuilding Schedule)							
Alternative 1: No action. Do not define a schedule/time frame for rebuilding Nassau grouper.							
Alternative 2: Rebuild Nassau grouper to B_{MSY} in 25 years, using the formula T_{min} (10 years) + one generation (15 years) = 25 years.						X	

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
Alternative 3: Rebuild Nassau grouper to B_{MSY} in 52.5 years, using the formula T_{min} (10 years) + one generation (42.5 years) = 52.5 years.							
Alternative 4: Rebuild Nassau grouper to B_{MSY} in 80 years, using the formula T_{min} (10 years) + one generation (70 years) = 80 years.							
Nassau Grouper (Rebuilding Strategy)							
Alternative 1: No action. Rely on current regulations to rebuild the stock to B_{MSY} within the required time frame.							
Alternative 2: Prohibit the filleting of fish in federal waters of the U.S. Caribbean. Require that fish captured or possessed in federal waters be landed with heads and fins intact						X	
Alternative 3: Establish a seasonal or area closure to protect spawning stock.							
Alternative 4: Develop a memorandum of understanding (MOU) between NMFS and the USVI government to develop compatible regulations to achieve the objectives for Nassau grouper set forth in the Caribbean Fishery Management Council's Reef Fish FMP in USVI and federal waters of the U.S. Caribbean.						X	
Goliath Grouper (Rebuilding Schedule)							
Alternative 1: No action. Do not define a schedule/time frame for rebuilding Goliath grouper.							
Alternative 2: Rebuild Goliath grouper to B_{MSY} in 30 years, using the formula T_{min} (10 years) + one generation (20 years) = 30 years.						X	
Alternative 3: Rebuild Goliath grouper to B_{MSY} in 67.5 years, using the formula T_{min} (10 years) + one generation (57.5 years) = 67.5 years.							
Alternative 4: Rebuild Goliath grouper to B_{MSY} in 105 years, using the formula T_{min} (10 years) + one generation (95 years) = 105 years.							
Goliath Grouper (Rebuilding Strategy)							
Alternative 1: No action. Rely on current regulations to rebuild the stock to B_{MSY} within the required time frame.							
Alternative 2: Prohibit the filleting of fish in federal waters of the U.S. Caribbean. Require that fish captured or possessed in federal waters be landed with heads and fins intact						X	
Alternative 3: Establish a seasonal or area closure to protect spawning stock.							
Queen Conch (Rebuilding Schedule)							
Alternative 1: No action. Do not define a schedule/time frame for rebuilding queen conch.							
Alternative 2: Rebuild queen conch to B_{MSY} in 15 years, using the formula T_{min} (10 years) + one generation (5 years) = 15 years.			X				
Alternative 3: Rebuild queen conch to B_{MSY} in 20 years, using the formula T_{min} (15 years) + one generation (5 years) = 20 years.							

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
Queen Conch (Rebuilding Strategy)							
Alternative 1: No action. Rely on current regulations to rebuild the stock to B_{MSY} within the required time frame.							
Alternative 2: Prohibit commercial and recreational catch and possession of queen conch in federal waters of the U.S. Caribbean.							
Alternative 3: Prohibit commercial and recreational catch, and possession of queen conch in federal waters of the U.S. Caribbean, with the exception of Lang Bank near St. Croix.			X				
Alternative 4: Develop a memorandum of understanding (MOU) between NMFS and the state governments to develop compatible regulations to achieve the management objectives set forth in the Council's Queen Conch FMP in state and federal waters of the U.S. Caribbean.							
Grouper Unit 4 (Rebuilding Schedule)							
Alternative 1: No action. Do not define a schedule/time frame for rebuilding Grouper Unit 4.							
Alternative 2: Rebuild Grouper Unit 4 to B_{MSY} in 10 years.						X	
Alternative 3: Rebuild Grouper Unit 4 to B_{MSY} in 2 years.							
Alternative 4: Rebuild Grouper Unit 4 to B_{MSY} in 6 years.							

CONSERVING AND PROTECTING YELLOWFIN GROUPEr

Alternative 1: No action. Do not establish a seasonal closure of the Grammanik Bank.							
Alternative 2: Close the Grammanik Bank to all fishing from February 1 to April 30 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 12.40' N, 64° 59.00' W; 18° 10.00' N, 64° 59.00' W; 18° 10.00' N, 64° 56.10' W; and 18° 12.40' N, 64° 56.10' W.							
Alternative 3: Close the Grammanik Bank to all fishing from February 1 to April 15 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 13.20' N, 64° 59.00' W; 18° 13.20' N, 64° 54.00' W; 18° 09.50' N, 64° 59.00' W; and 18° 09.50' N, 64° 54.00' W.							
Alternative 4: Close the Grammanik Bank to all fishing from February 1 to April 15 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 12.00' N, 64° 58.00' W; 18° 12.00' N, 64° 57.00' W; 18° 11.00' N, 64° 57.00' W; and 18° 11.00' N, 64° 58.00' W.							
Alternative 5: Close the Grammanik Bank to all fishing from February 1 to May 31 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 13.20' N, 64° 59.00' W; 18° 13.20' N, 64° 54.00' W; 18° 09.50' N, 64° 59.00' W; and 18° 09.50' N, 64° 54.00' W.							
Alternative 6: Close the Grammanik Bank to all fishing from February 1 to May 31 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 12.00' N, 64° 58.00' W; 18° 12.00' N, 64° 57.00' W; 18° 11.00' N, 64° 57.00' W; and 18° 11.00' N, 64° 58.00' W.							

MANAGEMENT ACTION	CORAL		QUEEN CONCH		REEF FISH		LOBSTER
	AT	AO	QC	AO	AT	AO	
Alternative 7. Close the Grammanik Bank to all fishing from February 1 to April 30 of each year. The proposed boundaries for the Grammanik Bank closed area are: 18° 11.898' N, 64° 56.328' W; 18° 11.645' N, 64° 56.225' W; 18° 11.058' N, 64° 57.810' W; and 18° 11.311' N, 64° 57.913' W.			X			X	X
Alternative 8: Prohibit the harvest and possession of yellowfin grouper in the U.S. EEZ, in conjunction with the closure of the Grammanik Bank.							

ACHIEVING THE MSFCMA BYCATCH MANDATES

Bycatch Reporting							
Alternative 1: No action. Do not establish a bycatch reporting program in the U.S. Caribbean.							
Alternative 2: Develop and implement a federal permit system for commercial and charter boat fishermen participating in Council-managed fisheries, with an associated mandatory monthly reporting requirement.							
Alternative 3: Utilize the MRFSS database to provide additional bycatch information on the recreational and subsistence sectors.	X		X	X	X	X	X
Alternative 4: Modify the trip ticket system currently in place in the U.S. Caribbean to require the collection of information on bycatch.	X		X	X	X	X	X
Minimizing Bycatch and Bycatch Mortality to the Extent Practicable							
Alternative 1: No action. Rely on current management measures to minimize bycatch and bycatch mortality.							
Alternative 2: Increase the minimum allowable mesh size for fish traps.							
Alternative 3: Establish a minimum mesh size of two inches and a maximum mesh size of six inches, stretched mesh, for gill and trammel nets. Additionally, gill and trammel nets must be tended at all times.							
Alternative 4: Amend current requirements for trap construction such that only one escape panel be required, which could be the door.							

ACHIEVING THE MSFCMA EFH MANDATES

Describe and identify EFH							
Alternative 1. No action.							
Alternative 2. Implement the preferred alternative from the EFH EIS to describe and identify EFH according to functional relationships between life history stages of federally-managed species and Caribbean marine and estuarine habitats.		X	X			X	X
Alternative 3. Implement the preferred alternative from the EFH EIS to designate HAPCs.		X	X			X	X
Minimize adverse effects on EFH							
Alternative 1. No action.							
Alternative 2. Implement the preferred alternative from the EFH EIS to establish modifications to anchoring techniques; establish modifications to construction specifications for pots/traps; and close areas to certain recreational and commercial fishing gears (i.e., pots/traps, gill/trammel nets, and bottom longlines) to prevent, mitigate, or minimize adverse fishing impacts in the EEZ.		X	X			X	X

The alternatives to no action described in Section 4.1 would re-define the FMUs and sub-units in the Queen Conch, Reef Fish, and Coral FMPs. Changes to the status quo examined under these alternatives include: (1) Redefining select FMUs to represent only those species that are present in sufficient numbers in the U.S. EEZ to warrant inclusion in Council FMPs; (2) retaining select species in FMUs for data collection only, based on a lack of need for conservation and management in federal waters; and (3) defining or modifying FMU sub-units to include species that are best managed in coordination, for example, species that may be targeted collectively due to similar habitat and depth preference, or landed collectively due to gear type employed by the fishery.

The alternatives described in Section 4.2 define, or modify existing definitions of, stock status parameters necessary under the MSFCMA, including maximum sustainable yield, optimum yield, minimum stock size threshold, and maximum fishing mortality threshold. Additionally, these alternatives provide quantitative definitions of stock status based on the best available scientific information on the condition of individual stocks and fisheries, and would establish control rules, or pre-agreed upon strategies for managing catches to achieve established goals and objectives. The parameters that would result for each stock or stock complex under each of these alternatives are detailed in Tables 8-11 .

Section 4.3 includes alternatives to keep catches in line with the preferred targets and thresholds described in Section 4.2 through regulation of fishing effort. The alternatives are designed to achieve immediate reductions in fishing mortality and include closed seasons and areas, gear restrictions, and administrative actions to foster the development of consistent regulations in state and federal waters.

Section 4.4 describes alternative schedules and management strategies to rebuild four stocks, or FMU sub-units, under the Council's jurisdiction: Goliath grouper, Grouper Unit 4 (misty grouper, red grouper, tiger grouper, yellowedge grouper, and yellowfin grouper), Nassau grouper, and queen conch. Goliath grouper, Nassau grouper, and queen conch are classified as overfished in NOAA's National Marine Fisheries Service's (NMFS) most recent report to Congress on the status of fisheries of the United States (NMFS 2003a). Grouper Unit 4 will be considered to be overfished when the Council's preferred definitions of FMU sub-units (Section 4.1) and stock status determination criteria (4.2) are adopted and implemented through this amendment.

Alternative rebuilding schedules evaluated in this amendment are consistent with the guidance provided in NMFS' National Standard Guidelines (50 CFR §600.310(e)). The shortest possible rebuilding period is defined as the length of time for a stock to rebuild in the absence of fishing mortality on that stock (T_{MIN}). The longest recommended rebuilding period is defined as ten years if $T_{MIN} < 10$, or T_{MIN} plus one mean generation time if $T_{MIN} > 10$. Generally, the mid-point between the shortest possible and longest allowable rebuilding periods is evaluated as a third alternative. Alternatives for achieving rebuilding targets include seasonal and area closures, a prohibition on the filleting of fish at sea, catch restrictions, and administrative action to promote the development of compatible regulations in state waters.

Section 4.5 outlines additional management actions the Council could adopt to increase protections for yellowfin grouper, one of the species included in the Council's proposed Grouper Unit 4. These alternatives examine various closed areas and seasons designed to protect an identified yellowfin grouper spawning aggregation on Grammanik Bank, south of St. Thomas. They were originally being developed in a separate amendment to the Reef Fish FMP, but were transferred to this amendment to streamline the administrative process and to reduce the amount of time before they were brought before the Council for final consideration.

Section 4.6 describes alternatives considered by the Council to: (1) Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in federal fisheries (Section 4.6.1), and (2) minimize bycatch and bycatch mortality to the extent practicable (Section 4.6.2). Alternatives to establish a bycatch reporting methodology include developing a federal permit and reporting system, modifying the current state reporting systems, and no action. Management measures evaluated for their ability to further reduce bycatch include various types of gear modifications, such as increasing the minimum allowable mesh size used in traps and nets.

Finally, the alternatives contained in Section 4.7 describe and identify EFH for managed stocks, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat. The EFH preferred alternatives describe and identify EFH according to functional relationships between life history stages of federally-managed species and Caribbean marine and estuarine habitats. Also identified are habitat areas of particular concern (HAPCs), based on confirmed spawning aggregations of managed species, or based on areas or sites identified as having particular ecological importance to Caribbean reef fish or coral species. The alternative to minimize impacts on EFH includes the requirement to use at least one buoy that floats on the surface on all individual traps/pots, or at each end of trap lines linking traps/pots for all fishing vessels that fish for or possess Caribbean spiny lobster or Caribbean reef fish species; the requirement of an anchor retrieval system for commercial and recreational fishing vessels that fish for or possess Caribbean reef species; and the prohibition of the use of pots/traps, gill/trammel nets, and bottom longlines on coral or hard bottom habitat at documented reef fish spawning areas.

1.2 Environmental consequences

Section 6.0 describes the potential impacts of the alternatives considered in this amendment to the physical, biological/ecological, social/economic, and administrative environments in the U.S. Caribbean.

1.2.1 Physical environment

Generally, impacts to the physical environment are expected to be minimal. Some alternatives regulating the type of gear used or areas fished could benefit habitat. However, since only about 14% of fishable habitat (for the purposes of this amendment, fishable habitat is defined as all

habitat within 100 fathoms of depth) in the U.S. Caribbean occurs in federal waters (Section 2.11; Figure 1), such benefits would not be expected to be significant. A notable exception would be the potential implementation of Memoranda of Understanding (MOUs) with the States, in conjunction with an alternative to restrict or prohibit the use of a certain gear type (e.g., fish traps), which could lead to significant benefits to the physical environment.

1.2.2 Biological/ecological environment

Impacts to the biological/ecological environment associated with most alternatives to no action are expected to be largely positive. But, again, these impacts are not likely to be significant (excluding a potential MOU scenario), as the majority of affected species harvested in the U.S. Caribbean occur in state waters.

Given the suite of stock status parameters adopted in Section 4.2, harvest needs to be reduced, which will benefit the stocks of reef fish that are over-exploited. The more significant impacts to the biological environment would result from those alternatives in Section 4.3. Gear restrictions or area/seasonal closures are expected to reduce fishery-related impacts on habitat, as well as reduce fishing mortality on numerous reef fish species.

Alternatives in Section 4.4 would primarily have a species-specific effect, as rebuilding strategies are aimed at rebuilding those species that are determined to be overfished. However, some rebuilding strategies could indirectly impact other species. For example, a regulation prohibiting the filleting of fish at sea could improve species identification and data collection, while stemming the poaching of prohibited species and deterring the harvest of under-sized species. Furthermore, the administrative alternatives evaluated in this section could improve state management capacity and benefit numerous species by providing fishery managers a vehicle for enhancing federal-state cooperation.

The alternatives described in Section 4.5, which are designed to conserve and protect yellowfin grouper, also could benefit numerous other species. The closed area options are intended to result in the protection of yellowfin grouper spawning aggregations on Grammanik Bank. Since the alternatives would prohibit all fishing within the specified coordinates, other species, including those species in the Coral FMP that are considered EFH (i.e., corals), would benefit from the closure as well. However, as with any closed area or season, there could be negative effects associated with these alternatives. Intensified fishing before and after a closed season could reduce or negate benefits accrued during the closure. Likewise, displaced fishing activities could increase pressure on juveniles in state waters, or impair EFH through intensified fishing activities in waters outside the closed area.

The bycatch alternatives presented in Section 4.6 are intended to provide more and better data on bycatch in U.S. Caribbean fisheries, as well as reduce the amount of bycatch in federal waters. The gear prohibitions or modifications described in that section could benefit finfish species by reducing the number of juvenile or prohibited species harvested. Additionally, the prohibition of

a specific gear type could benefit the environment should the gear adversely impact EFH. However, any such benefits could be reduced or negated if fishermen adapt existing or develop new gear types that have greater impacts, or if they intensify their fishing effort in response to new regulations.

Regardless of which alternative is selected, it is imperative to point out that the biological and ecological benefits are likely to be reduced or entirely negated if consistent action is not pursued in state waters. This is more fully discussed in Section 1.3.

1.2.3 Social/economic environment

Impacts to the social and economic environment associated with alternatives to no action are generally expected to be negative in the short term, and positive in the long term. The majority of alternatives in Sections 4.1 and 4.2 would not have a direct economic effect to fishermen. However, they could lead to indirect effects due to required reductions in fishing mortality associated with the selection of a particular control rule. This could restrict the number of fish available to fishermen in the short term, which could negatively impact fishermen's income. Regardless, any potential negative indirect effects are expected to be overshadowed by long-term benefits resulting from the rebuilding of overfished stocks, the prevention of overfishing, and the establishment of sustainable fisheries.

Alternatives described in Sections 4.3 and 4.4 could have a significant direct economic impact on fishermen in the short term. Due to the lack of information on the amount of fishing in federal waters, it is not possible to quantify the precise economic impact to fishermen. While the closed area alternatives, in particular, may reduce fishermen's income, they are unlikely to result in fishermen going out of business due to the fact that the majority of habitat and harvest occurs in state waters. Gear modifications and/or prohibitions, if adopted, would force fishermen either to displace their activities to state waters, or to modify/change their gear. This could present significant short-term social and economic impacts depending on the amount of gear employed by affected fishermen, and the extent to which those user groups fish in the EEZ. However, as mentioned earlier, any potential negative effects in the short term are expected to be overshadowed by long-term benefits resulting from the rebuilding of overfished stocks, the prevention of overfishing, and the establishment of sustainable fisheries.

The complete prohibition on queen conch harvest in the EEZ that is proposed in Section 4.4 is the most restrictive management action available to the Council to end overfishing of that species. Because the extent of queen conch harvest in federal waters appears to be very limited (particularly in Puerto Rico), the direct short-term adverse socioeconomic impacts associated with the fishery closure are likely to be relatively small. To the extent that the proposed closure of the federal waters would allow for recovery of the stock, however, any adverse impacts would likely be outweighed by long-term benefits. Furthermore, if the harvest of queen conch is not prohibited in federal waters, it is likely that landings will continue to decline and the fishery will approach or reach commercial extinction as has happened in other Caribbean and U.S. waters.

Similar to the closed area alternatives in Section 4.3.1, the closed area alternatives for Grammanik Bank in Section 4.5 could result in decreased revenue for fishermen during the closed season. The actual size and length of the closure would ultimately determine the extent of any socio-economic impact. Generally, the larger the closed area (e.g., Alternative 3 versus Alternative 4) and the longer the duration (e.g., Alternative 4 versus Alternative 6), the greater the economic impact. However, based on available landings information, the total prohibition on yellowfin grouper harvest and possession during the spawning period (i.e., Alternative 7) will likely not result in a significant economic impact.

The bycatch alternatives in Section 4.6 could potentially result in social and economic impacts, moreso in the USVI than Puerto Rico due to greater USVI fishermen utilization and dependence on the EEZ. Due to the current lack of a mandatory permit and reporting system in the EEZ, establishing a new federal permit system could result in confusion among fishing communities. Furthermore, there may be a resistance to purchase a federal permit, especially considering the limited harvest originating from the EEZ, the existence of mandatory state permitting requirements (i.e., paying for yet another permit), and the level of active enforcement in the area. Any gear prohibition or modification alternatives (Section 4.6.2) could result in economic impacts to fishermen who would be forced to modify their gear or switch to a new gear type, as well as social impacts stemming from confusion among fishing communities.

1.2.4 Administrative environment

Impacts associated with many of the alternatives to no action are expected to impose additional burdens on the administrative environment, but to result in a more manageable and responsive management system. Establishing biological reference points and stock status determination criteria should directly benefit (rather than burden) the administrative environment by providing fishery scientists and managers specific objective and measurable criteria to use in assessing the status and performance of Caribbean fisheries. The Council and regional fishermen have expressed a desire for improved enforcement in the region. In order to assure compliance with many of the alternatives proposed in this amendment, increased funding to improve the effectiveness of enforcement would be required. This would be especially important with regards to the closed area and gear prohibition alternatives. Additional personnel and boats would be required to properly monitor the closed areas to prevent poaching, and to inspect gear and fishermen's catch offshore. Due to the potential for inconsistent regulations between state and federal waters, an enhanced enforcement presence would be critical to ensure compliance with some of the proposed fishery regulations (e.g., seasonal yellowfin grouper harvest prohibition) unless local governments adopt complimentary regulations. Only under certain situations (e.g., preemption) would the federal government be able to control fisheries in state waters.

1.3 Major conclusions and areas of controversy

As noted throughout the amendment, consistent management in state waters is essential in order for most, if not all, of the proposed management actions to achieve the desired goals in federal waters. The majority of habitat, especially juvenile habitat, occurs in state waters. While available landings data do not differentiate between state and federal waters, it is generally understood that the vast majority of total landings in the U.S. Caribbean originate from state waters due to the disparity of fishable habitat between state and federal waters, which is discussed further in Section 2.1.1. Therefore, state cooperation and establishment of consistent fishery regulations will be crucial if fisheries are to be managed effectively. This is especially important with regards to rebuilding overfished species such as Nassau grouper and queen conch, where continued harvest in state waters jeopardizes federal rebuilding programs.

For example, while this amendment proposes to prohibit the harvest of queen conch, an overfished species, in federal waters, we only expect modest improvements in its condition without state action. This is validated by the fact that the status of Nassau grouper has yet to improve after almost a decade of prohibited catches in federal waters while the harvest of this species has been permitted in USVI waters. Puerto Rico had permitted the harvest of Nassau grouper and Goliath grouper; however, they implemented new regulations on March 12, 2004, to prohibit the possession or sale of these two species¹.

Consistent regulations in state waters would be desirable for any gear modifications or prohibitions, lest any regulatory or enforcement loopholes in state waters negate any benefits that could be achieved in federal waters. For example, a gear prohibition in federal waters could be ineffective if similar regulations are not implemented in state waters, since, in the absence of adequate at-sea enforcement in the EEZ, fishermen could simply state upon returning to the dock that their catch originated from state waters.

While there are likely to be negative social and economic impacts associated with some of the proposed alternatives, the social, economic, and biological consequences of not taking any action could be far more severe in the long-term. The preferred alternatives evaluated in this amendment, especially if implemented in conjunction with consistent state regulations, are expected to improve the biological status of fishery resources in the U.S. Caribbean and to establish long-term benefits to fishing communities, the U.S. Caribbean islands, and the nation.

1.4 Incomplete or unavailable information

Section 1502.22 of NEPA requires agencies to clearly state if information is incomplete or unavailable when evaluating reasonably foreseeable significant adverse effects on the human

¹ The new (2004) Puerto Rican fishing regulations established closed areas; implemented minimum sizes for several managed species, quotas for aquarium trade species, license and reporting requirements; and prohibited the harvest of certain species and the use of certain gear types.

environment in an EIS. The following summarizes the NEPA requirements when dealing with incomplete or unavailable information, as it pertains to this EIS:

1.4.1 Availability and completeness of the utilized information

This EIS utilizes the best available scientific information available through 2002 to evaluate the impacts on the human environment. However, the extent of that information limits the amount of detail that can be conducted during the various impact analyses, and requires that various reasonable assumptions and theoretical approaches be employed. Subsequent to the completion of analyses for this document, some additional information has become available regarding certain aspects of the fisheries in the region. Even so, the conclusions reached in this document would not change significantly, had this newer information been available.

There is a general absence of any regional stock assessments for species managed by the Caribbean Council. Furthermore, restrictions on biological data (e.g., natural mortality rates) in the U.S. Caribbean imposes other obstacles to accurately evaluating the conditions of the fisheries. Landings data are fairly rudimentary, with very coarse spatial effort information. Generally, Puerto Rico does not distinguish catch between state and federal waters, and while the USVI does indicate catch between these jurisdictions, the utility of that information is rather limited. This is due, in part, to the fact that USVI fishing activities could transpire in both the EEZ and in state waters on any given fishing trip due to the wider shelf and the narrower 3 nm state jurisdictional boundary. Due to these issues, it is currently impossible to parse out catch/effort specifically from the EEZ (i.e., Council jurisdiction). Another issue with the landings data is the lack of discrete species identification, specifically with USVI landings. Instead of individual species reported and grouped by gear type, some species are grouped together. For example, all snapper species are grouped together, as are all grouper species. This complicates the identification of declining catch in any particular species, which could indicate reduced biomass or an overfishing/overfished condition, as grouping at this scale could mask these species-specific trends.

There is a trivial amount of information on the U.S. Caribbean recreational fishery. While the Marine Recreational Fisheries Statistical Survey (MRFSS) has collected survey information from Puerto Rico since 2000, it does not gather recreational statistics from the USVI. Furthermore, as with the commercial landings data in Puerto Rico, MRFSS data do not differentiate between state and federal waters. Therefore, it is impossible to determine the extent of the recreational fishery that transpires solely in the EEZ.

There are also significant socio-economic information gaps. Until 2004, fishermen in Puerto Rico were not required to possess a fishing permit. Therefore, it is likely that unreported fishing activity transpired off Puerto Rico; the portion of that unreported activity that occurred specifically in the EEZ is unknown. While fishermen in Puerto Rico generally sell their catch to fish houses or dealers, no such structure exists in the USVI. Fishermen in the USVI typically market their catch directly. Due to the lack of a centralized infrastructure, it is possible that a

portion of the potentially available socio-economic data (e.g., price per pound, revenue generated, etc.) is lost. While there have been some socio-economic studies performed in the U.S. Caribbean, due to the aforementioned issues with landings data, the utility of those studies is limited. Again, there is a paucity of information pertaining to the recreational fishery, including the fore-hire component.

Due to the excessive time required in obtaining this needed information (e.g., detailed stock assessments, discrete landings information specifically for the EEZ available in a long-time series, refined and accurate spatial effort data, etc.), as well as the complicated logistics and lack of fishery infrastructure in some areas that could impede successful data acquisition, the costs of obtaining this needed information would be exorbitant.

1.4.2 Relevance of the incomplete or unavailable information

The information currently not available is directly relevant to disseminating the status of managed marine resources (e.g., MSY, OY, etc.), as well as evaluating potential impacts resulting from the proposed management alternatives. Because of the lack of discrete biological data for the U.S. Caribbean, managers are handicapped and must rely on related studies conducted, and information gathered, in other geographic areas. Further, due to the caveats with the currently available landings data, assumptions must be made to arrive at any conclusions on the status of the managed resources or on impacts to potentially affected users as it relates to the EEZ (i.e., Council jurisdiction).

1.4.3 Summary of existing credible scientific evidence

Currently, the largest pool of area-specific information that can be utilized to evaluate the status of Council-managed species is the commercial landings data from Puerto Rico and the USVI, which is discussed in Section 5.3.1.4. Also, a very limited time series of recreational statistics from Puerto Rico is available from MRFSS, which is discussed in Section 5.3.2.3. No recent comprehensive stock assessments have been conducted on any Council-managed species; a preliminary assessment scenario was completed for queen conch in 2002, but it was not a full stock assessment.

When available, studies conducted in the U.S. Caribbean were used to develop biological profiles; this information was supplemented with information collected in analogous or reasonably comparable locales. For example, biological information from the Florida Keys reef tract were utilized for many species. These studies included data such as natural mortality rates, fecundity, age at maturity, habitat preferences, prey, etc. This information appears throughout Section 5.2, and is employed in Section 6 when evaluating the impacts to the geological and biological/ecological environments.

Statistics from the respective state governments, as well as numerous academic studies on the socio-economic aspects of U.S. Caribbean fisheries currently exist and were employed in this EIS. This includes statistics on the number of fishermen, number and type of boats, gear

information, effort, age composition of fishermen, etc. This information appears throughout Section 5.3, and is utilized in Section 6 when evaluating the impacts to the socio-economic and administrative environments.

The studies that were utilized in this EIS to evaluate the effects on the human environment are cited in Section 10. Furthermore, all data that are included in the various tables in the Appendix are cited appropriately. As noted in Section 1.4.1, some new information has recently become available regarding the fish and fisheries of the region, but the conclusions reached here would not change significantly had that information been available during the time frame that analyses for this document were being conducted.

1.4.4 Evaluation of impacts

Due to the complete lack of both detailed stock assessments for Council-managed species and more discrete landings and effort data, the analyses in this amendment relied on informed judgement and theoretical approaches in some situations to provide a reasonable range of alternatives, as well as sufficient information that could be utilized to evaluate the potential impacts of the proposed alternatives. These determinations and approaches were developed by the SFA Working Group, which consisted of scientists, managers, and environmentalists. This methodology is generally accepted in the scientific community, especially in data-poor situations; as stated in Restrepo *et al.* (1998), “in cases of severe data limitations, qualitative approaches may be necessary, including expert opinion and consensus-building methods.”

Fishery management sub-units were developed to allow for more refined and efficient management. These sub-units were grouped based on similarities in the biology (e.g., habitat preference) and perceived status of the species, and in the way in which the grouped species are harvested. Adjustment of the available commercial landings data was required due to differences in the format between Puerto Rico and USVI records. For example, due to the species grouping mentioned earlier, USVI snapper and grouper were extrapolated using USVI landings, and then modifying it by the percentage that the various grouper and snapper sub-units appeared in the Puerto Rican landings. The result of this effort appears in Table 5. Recreational reef fish landings for USVI were estimated by forecasting a recreational landings estimate using the same approach as done by Jennings (1992). The percentage of each species (or group) from Puerto Rico's recreational landings were used to derive recreational landings for the USVI. For the USVI, the recreational catch for queen conch and spiny lobster was assumed to be 50% of the USVI commercial landings, approximating the same commercial:recreational relationship as for that in Puerto Rico. The result of this effort appears in Table 6.

Due to the lack of discrete habitat mapping, as well as explicit spatial effort information, assumptions had to be made not only about catch, but moreover about catch specifically in the EEZ. An important assumption that was made, one that appears throughout this document, is that of “fishable habitat.” The majority of managed species and fishing effort appears to be concentrated on the continental shelf around the U.S. Caribbean; the delineation for this area is the 100-fathom contour. Beyond 100 fathoms, the bathymetry gets very steep, and the increased

water depth quickly precludes most fishing activities (i.e., for Council-managed species). The available biological information (e.g., depth range, habitat preference) on managed species that appears in Section 5.2 helps to support this conclusion. Only 14.39% of the EEZ (i.e., Council jurisdiction) is shallower than 100 fathoms. Therefore, it is a reasonable assumption that the majority of fishing activity occurs in state waters. This assumption is significant in regards to evaluating the impacts of various management alternatives in Section 6, such as the area closure alternatives.

In order to determine or scale the potential impacts of the various management alternatives, specifically those offered to reduce fishing mortality, a further assumption had to be made in how to utilize the landings data. Due to the absence of currently existing spatial catch and effort information in the U.S. Caribbean, it was assumed that catch was evenly distributed throughout the fishable habitat area. For example, 14.39% of total landings for the U.S. Caribbean, or from any particular sub-unit, that appear in Table 7 are assumed to have originated from the EEZ. That is, a 10% closure of waters 100 fathoms or less would result in a 10% reduction in fishing mortality. This approach obviously has some inherent drawbacks, but, due to the lack of more refined spatial effort and habitat information, it is within the rule of reason.

Therefore, due to the information deficiencies noted above, the costs of obtaining which would be exorbitant and would require time on the scale of years, the assumptions and theoretical approaches noted herein were employed for the purposes of this EIS.

2 Introduction

2.1 The fishery management process and applicable laws

2.1.1 Federal fishery management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The MSFCMA claims sovereign rights and exclusive fishery management authority over most fishery resources within the U.S. EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over U.S. anadromous species and continental shelf resources that occur beyond the U.S. EEZ.

Responsibility for federal fishery management decision-making is divided between the U.S. Secretary of Commerce and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary of Commerce (Secretary) is responsible for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the MSFCMA, and with other applicable laws summarized in Section 8. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for fishery resources in federal waters of the U.S. Caribbean. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the Commonwealth of Puerto Rico and the three-mile seaward boundary of the territory of the U.S. Virgin Islands (USVI) (see Figure 1).

The total area of fishable habitat in the U.S. Caribbean is about 2,467 nm². Only 355 nm² (14.39%) of that area occurs in federal waters: 116 nm² (4.7%) off Puerto Rico; 240 nm² (9.7%), off the USVI. The vast majority of the fishable habitat in federal waters off Puerto Rico is located off the west coast. The vast majority of the fishable habitat in federal waters off the USVI is located off the north coast of St. Thomas. Due to the steep continental slopes that occur off Puerto Rico and the USVI, fishable habitat is defined as those waters 100 fathoms or shallower. The majority of fish habitat occurs in that area, as does the majority of fishing activity for Council-managed species. Beyond 100 fathoms, the sea bed drops off dramatically and is difficult to fish, as it requires larger vessels and more gear (e.g., more line for fish traps, handlines, etc.), both of which are not typical of non-highly migratory species U.S. Caribbean fisheries.

The Council consists of seven voting members: four public members appointed by the Secretary, one each from the fishery agencies of Puerto Rico and the USVI, and one from NMFS. Public interests are also involved in the fishery management process through participation on advisory panels and through Council meetings which, with few exceptions for discussing personnel matters, are open to the public. In addition, the regulatory process is in accordance with the Administrative Procedures Act, in the form of “notice and comment” rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the U.S. Coast Guard and state authorities. But enforcement in the Caribbean region is severely underfunded. Because personnel and equipment are limited, enforcement depends largely on voluntary compliance (The Heinz Center 2000).

The Fishery Conservation Amendments of 1990 (P.L. 101-627) conferred management authority for Atlantic highly migratory species (HMS), including tunas, oceanic sharks, marlins, sailfishes, and swordfish, to the Secretary from the Fishery Management Councils. At that time, the Secretary delegated authority to manage these species in the Atlantic Ocean, including the Gulf of Mexico and Caribbean Sea, to NMFS. NMFS is responsible for preparing, monitoring, and revising management plans for HMS needing management, while the Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring that management measures are consistent with the MSFCMA, and with other applicable laws as summarized in Section 8 of this document. For additional information regarding the HMS management process and authority, please refer to the Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks (HMS FMP).

2.1.2 State fishery management

The governments of the Commonwealth of Puerto Rico and the Territory of the USVI have the authority to manage their respective state fisheries. As a Commonwealth, Puerto Rico has an autonomous government, but is voluntarily associated with the United States. The USVI is an unincorporated territory with a semi-autonomous government and its own constitution (OTA 1987).

Puerto Rico has jurisdiction over fisheries in waters extending nine nautical miles from shore. Those fisheries are managed by the Fisheries Research Laboratory of Puerto Rico's Department of Natural and Environmental Resources (DNER). Section 19 of Article 6 of the Constitution provides fishery rules and regulations.

The USVI has jurisdiction over fisheries in waters extending three nautical miles from shore, with the exception of about 5,650 acres of submerged lands off St. John, which are owned and managed by the National Park Service (Goenaga and Boulon 1991). The Department of Planning and Natural Resources' (DPNR) is the USVI's fishery management agency. Rules and regulations for USVI fisheries are codified in the Virgin Islands Code, primarily within Title 12.

Each state fishery management agency has a designated seat on the Council. The purpose of state representation at the Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. But, while the states have adopted compatible regulations for some stocks, some fishery regulations remain inconsistent. For example, both state agencies prohibit the taking of corals from state waters, consistent with federal regulations. But, until recently, neither state agency prohibited, or even regulated, catches of Nassau grouper, which have been prohibited in federal waters since 1990; Puerto Rico implemented new regulations on March 12, 2004, to prohibit the possession or sale of Nassau grouper but the USVI still permits the species' harvest. The lack of compatible regulations in state waters makes federal regulations difficult to enforce and hinders the Council's ability to achieve federal management objectives in some instances.

Both Puerto Rico and the USVI require commercial fishing permits and reporting. Puerto Rico requires a license for commercial fishermen, and have categories for full-time, part-time, novice, and non-resident commercial fishermen, and owners of rental boats, including charter and party/head boats. Additional commercial permits are issued for common lobster, conch, common land crab, incidental catch, and sirajo goby (i.e., ceti) fisheries. Puerto Rico also requires a recreational license for all recreational fishermen 13 years and older (excluding fishermen on charter or head boats). Additional recreational permits are required for common lobster, conch, common land crab, billfish, freshwater shrimp, and sirajo goby. The USVI only has a license requirement for commercial fishermen who are permanent USVI residents, with the exception of

a recreational shrimp permit for Altona Lagoon and Great Pond on St. Croix, and for fishing activities in the Great St. James Marine Reserve off St. Thomas.

2.1.3 International issues

The “Wider Caribbean” region, referred to as the Western Central Atlantic (Fishery Statistical Area 31) by the United Nations Food and Agriculture Organization, includes the northeast coast of South America, the Caribbean Sea, the Gulf of Mexico, and the southeastern Atlantic coast of North America. The region is geopolitically complex with the highest density of separate states per unit area in the world. Caribbean Community (CARICOM) countries are distributed throughout the region, and their exclusive economic zones form a mosaic which includes most of the marine space in the region. While the USVI is not included as a CARICOM entity, Puerto Rico is considered an Observer State. A fisheries agreement between the United States and the United Kingdom of Great Britain and Northern Ireland is in effect for certain waters that are shared by fishermen from the British Virgin Islands and the United States, however, in May 2004 the United Kingdom government gave 90 days notice to dissolve this 1979 bilateral agreement. A similar agreement is being negotiated with the Dominican Republic (CFMC 1985).

Due to the potential for fisheries to be utilized by several different countries, the impact of other countries’ fishing and nonfishing activities should be considered. For example, if the resident population of a particular species in one area depends on the input of a spawning population from a different area (i.e., larval input), excessive exploitation of the spawning population could jeopardize numerous “downstream” populations. However, note that recent studies of tropical reef environments have stressed the greater importance of localized recruitment (e.g., Swearer et al. 1999; Cowen et al. 2000).

2.2 History of federal fisheries management

The Council manages 179 fish stocks under four FMPs:

- Fishery Management Plan for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Islands
- Fishery Management Plan for the Queen Conch Resources of Puerto Rico and the U.S. Virgin Islands
- Fishery Management Plan for the Reef Fish Fishery of Puerto Rico and the U.S. Virgin Islands
- Fishery Management Plan for the Corals and Reef Associated Invertebrates of Puerto Rico and the U.S. Virgin Islands

The HMS Management Division of NMFS manages Atlantic albacore tuna, bigeye tuna, bluefin tuna, skipjack tuna, oceanic sharks, swordfish, white marlin, blue marlin, sailfish, and longbill spear fish under two FMPs:

- Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks
- Fishery Management Plan for The Atlantic Billfishes

The history of management measures developed and implemented under each Council FMP and subsequent generic amendments is detailed in Sections 2.2.1 - 2.2.5. The history of management measures developed and implemented under each HMS Management Division FMP is detailed in Sections 2.2.6 - 2.2.7.

2.2.1 Fishery Management Plan for the Spiny Lobster Fishery of Puerto Rico and the U.S. Virgin Islands

The Council's Spiny Lobster FMP (CFMC 1981; 49 FR 50049) was implemented in January 1985, and was supported by an EIS. The FMP defined the Caribbean spiny lobster fishery management unit to include *Panulirus argus* (Caribbean spiny lobster), described objectives for the spiny lobster fishery, and established management measures to achieve those objectives. Primary management measures included:

- The definition of MSY as 830,000 lbs per year;
- The definition of OY as “all the non-[egg-bearing] spiny lobsters in the management area having a carapace length of 3.5 inches or greater that can be harvested on an annual basis,” which was estimated to range from 582,000 to 830,000 lbs per year;
- A prohibition on the retention of egg-bearing (berried) lobsters (berried female lobsters may be kept in pots or traps until the eggs are shed), and on all lobsters with a carapace length of less than 3.5 inches;
- A requirement to land lobster whole;
- A requirement to include a self-destruct panel and/or self-destruct door fastenings on traps and pots;
- A requirement to identify and mark traps, pots, buoys, and boats; and
- A prohibition on the use of poisons, drugs, or other chemicals, and on the use of spears, hooks, explosives, or similar devices to take spiny lobsters.

Amendment 1 to the Spiny Lobster FMP (CFMC 1990a; 56 FR 19098), implemented in May 1991, added to the FMP definitions of overfished and overfishing, and outlined framework actions that could be taken should overfishing occur. The amendment defined “overfished” as a biomass level below 20% of the spawning potential ratio (SPR). It defined “overfishing” as a harvest rate that is not consistent with a program implemented to rebuild the stock to the 20% SPR. That amendment was supported by an Environmental Assessment (EA) and a finding of no significant impact (FONSI).

2.2.2 Fishery Management Plan for the Queen Conch Resources of Puerto Rico and the U.S. Virgin Islands

The Council's Queen Conch FMP (CFMC 1996a; 61 FR 65481) was implemented in January 1997, and was supported by an EIS.

The FMP defined the queen conch fishery management unit (Table 2), described objectives for the queen conch fishery, and established management measures to achieve those objectives. Primary management measures included:

- The definition of the MSY of queen conch as 738,000 lbs per year;
- The definition of the OY of queen conch as “all queen conch commercially and recreationally harvested from the EEZ landed consistent with management measure set forth in this FMP under a goal of allowing 20% of the spawning stock biomass to remain intact;”
- A prohibition on the possession of queen conch that measure less than 9 inches total length or that have a shell lip thickness of less than 3/8 inches;
- A requirement that all conch species in the fishery management unit be landed in the shell;
- A prohibition on the sale of undersized queen conch and queen conch shells;
- A recreational bag limit of three queen conch per day, not to exceed 12 per boat;
- A commercial catch limit of 150 queen conch per day;
- An annual spawning season closure that extends from July 1 through September 30; and
- A prohibition on the use of hookah gear to harvest queen conch.

2.2.3 Fishery Management Plan for the Reef Fish Fishery of Puerto Rico and the U.S. Virgin Islands

The Council's Reef Fish FMP (CFMC 1985; 50 FR 34850) was implemented in September 1985. The FMP, which was supported by an EIS, defined the reef fish fishery management unit to include shallow water species only, described objectives for the shallow water reef fish fishery, and established management measures to achieve those objectives. Primary management measures included:

- The definition of MSY as equal to 7.7 million lbs;
- The definition of OY as “all of the fishes in the management unit that can be harvested by U.S. fishermen under the provisions of the FMP...This amount is currently estimated at 7.7 million lbs;”
- The specification of criteria for the construction of fish traps, which included a minimum 1 1/4-inch mesh size requirement and a requirement that fish traps contain a self-destruct panel and/or self-destruct door fastening;
- A requirement to identify and mark gear and boats;
- A prohibition on the use of poisons, drugs, and other chemicals and explosives to take reef fish;

- A prohibition on the take of yellowtail snapper that measure less than 8 inches total length for the first fishing year, to be increased one inch per year until the minimum size limit reached 12 inches;
- A prohibition on the take of Nassau grouper that measure less than 12 inches total length for the first fishing year, to be increased one inch per year until the minimum size limit reached 24 inches; and
- A prohibition on the take of Nassau grouper from January 1 to March 31 each year, a period that coincides with the spawning season of this species.

Amendment 1 to the Reef fish FMP (CFMC 1990b; 55 FR 46214) was implemented in December 1990. That amendment was supported by an EA with a FONSI. Primary management measures included:

- An increase in the minimum mesh size for traps to 2 inches;
- A prohibition on the take or possession of Nassau grouper; and
- A prohibition on fishing in an area southwest of St. Thomas, USVI from December 1 through February 28 of each year, a period that coincides with the spawning season for red hind (this seasonal closure would later become a year-round closure with the implementation of the Hind Bank Marine Conservation District through Amendment 1 to the Coral FMP).

Amendment 1 also defined overfished and overfishing for shallow water reef fish. “Overfished” was defined as a biomass level below 20% of the spawning stock biomass per recruit (SSBR) that would occur in the absence of fishing. For stocks that are overfished, “overfishing” was defined as a rate of harvest that is not consistent with a program that has been established to rebuild a stock or stock complex to the 20% SSBR level. For stocks that are not overfished, “overfishing” was defined as “a harvesting rate that if continued would lead to a state of the stock or stock complex that would not at least allow a harvest of OY on a continuing basis.”

A regulatory amendment to the Reef Fish FMP (CFMC 1991; 56 FR 48755) was implemented October 1991. The primary management measures contained in this amendment, which was supported by an EA with a FONSI, included:

- A modification to the mesh size increase implemented through Amendment 1 to allow a mesh size of 1.5 inches for hexagonal mesh, and a change in the effective date of the 2-inch minimum mesh size requirement for square mesh to September 13, 1993; and
- A change in the specifications for degradable panels for fish traps related to the required number of panels (required two panels per trap), and their size, location, construction, and method of attachment.

Amendment 2 to the Reef Fish FMP (CFMC 1993; 58 FR 53145), implemented in November 1993, was supported by an SEIS. That amendment redefined the reef fish fishery management

unit (Table 3) to include the major species of deep water reef fish and marine aquarium finfish. Primary management measures implemented through this amendment included:

- A prohibition on the use of any gear other than hand-held dip nets and slurp guns to collect marine aquarium fishes;
- A prohibition on the harvest or possession of Goliath grouper (formerly known as jewfish);
- A prohibition on the harvest, possession, and/or sale of certain species used in the aquarium trade, including seahorses and foureye, banded, and longsnout butterflyfish;
- A prohibition on fishing in an area off the west coast of Puerto Rico (Tourmaline Bank) from December 1 through February 28 each year, a period that coincides with the spawning season for red hind;
- A prohibition on fishing in an area off the east coast of St. Croix, USVI (Lang Bank) from December 1 through February 28 each year, a period that coincides with the spawning season for red hind; and
- A prohibition on fishing in an area off the southwest coast of St. Croix, USVI from March 1 through June 30 each year, a period that coincides with the spawning season for mutton snapper.

Existing definitions of MSY and OY were applied to all reef fish within the revised FMU, with the exception of marine aquarium finfish. The MSY and OY of marine aquarium finfish remained undefined.

A technical amendment to the Reef Fish FMP (59 FR 11560), implemented in April 1994, clarified the minimum mesh size allowed for fish traps.

Finally, an additional regulatory amendment to the Reef Fish FMP (CFMC 1996b; 61 FR 64485) was implemented in January 1997. That action, supported by an EA, reduced the size of the Tourmaline Bank closure that was originally implemented in 1993, and prohibited fishing in two areas off the west coast of Puerto Rico (Abrir La Sierra Bank (Buoy 6) and Bajo de Cico) from 1 December to 28 February of each year, a period that coincides with the spawning season of red hind.

2.2.4 Fishery Management Plan for the Corals and Reef Associated Invertebrates of Puerto Rico and the U.S. Virgin Islands

The Council's Coral FMP (CFMC 1994; 60 FR 58221) was implemented in December 1995.

The FMP, which was supported by an EIS, defined the coral fishery management unit (Table 4), described objectives for Caribbean coral resources, and established management measures to achieve those objectives. Primary management measures included:

- A prohibition on the take or possession of gorgonians, stony corals, and any species in the fishery management unit if attached or existing upon live rock;
- A prohibition on the sale or possession of any prohibited coral unless fully documented as to point of origin;
- A prohibition on the use of chemicals, plants, or plant-derived toxins, and explosives to take species in the coral fishery management unit; and
- A requirement that dip nets, slurp guns, hands, and other non-habitat destructive gear types be used to harvest allowable corals.

The FMP also required that harvesters of allowable corals obtain a permit from the local or federal government.

Amendment Number 1 to the Coral FMP (CFMC 1999; 64 FR 60132) was implemented in December 1999. Supported by an SEIS, that amendment established a closed area in the U.S. EEZ southwest of St. Thomas, USVI. That area is known as the Hind Bank Marine Conservation District (MCD). Fishing for any species, and anchoring by all fishing vessels, are prohibited in the Hind Bank MCD year round.

2.2.5 Generic FMP amendments

The Council submitted the Generic Essential Fish Habitat Amendment to the Spiny Lobster, Queen Conch, Reef Fish, and Coral Fishery Management Plans (Generic EFH Amendment with an EA) to NMFS in 1998 to comply with the EFH provisions of the MSFCMA. NMFS partially disapproved that amendment on March 29, 1999, finding that it did not evaluate all managed species or all fishing gears with the potential to damage fish habitat (64 FR 14884). The document was subsequently challenged by a coalition of environmental groups and fishing associations on the grounds that it did not comply with the requirements of the MSFCMA and NEPA (*American Oceans Campaign et al. v. Daley et al.*, Civ. No. 99-982 [D.D.C.]). The federal court opinion upheld the plaintiffs' claim that the Generic EFH Amendment with an EA was in violation of NEPA, but determined that the amendment was in accordance with the MSFCMA. The Council recently completed an FEIS for the Generic EFH Amendment to comply with the September 14, 2000 court order. The notice of availability of the draft EFH EIS was published in the *Federal Register* on August 1, 2003 (68 FR 45237). The comment period on that document ended on October 30, 2003. The notice of availability for the Record of Decision on the EFH FEIS was published in the *Federal Register* on May 25, 2004 (69 FR 29693).

The draft Comprehensive Sustainable Fisheries Act Amendment to the Spiny Lobster, Queen Conch, Reef Fish, and Coral Fishery Management Plans (Comprehensive SFA Amendment) prepared by the Council and noticed in the *Federal Register* on January 25, 2002 (67 FR 3679), was intended to amend all four council plans to meet additional requirements added to the MSFCMA in 1996 through a Congressional amendment known as the Sustainable Fisheries Act (SFA). But a federal review determined that the Comprehensive SFA Amendment was

inconsistent with the requirements of the SFA and NEPA. The lack of an adequate range of alternatives for defining biological reference points, rebuilding schedules, and bycatch reporting standards were the primary deficiencies cited in the notice of agency action to disapprove the document. That notice was published in the *Federal Register* on May 1, 2002 (67 FR 21598).

2.2.6 Fishery Management Plan for Atlantic Tunas, Swordfish, and Sharks

The HMS FMP was implemented in July 1999 (64 FR 29090).

The FMP, which was supported by and EIS, incorporated all existing management measures for Atlantic tuna and north Atlantic swordfish that had been issued previously under the authority of the Atlantic Tunas Convention Act (ATCA). It also incorporated all existing management measures for north Atlantic swordfish and Atlantic sharks that had been issued previously under the authority of the MSFCMA. Currently, south Atlantic Swordfish and south Atlantic albacore tuna are managed only under ATCA; Atlantic sharks are managed only under the MSFCMA.

The FMP described objectives for Atlantic HMS fisheries. The status determination criteria contained in the FMP allowed managers to determine whether overfishing was occurring or if stocks were overfished. The FMP also contained rebuilding programs for HMS that had been designated as overfished. Other measures selected in the HMS FMP included:

- Adopting quotas and time periods to rebuild Atlantic bluefin tuna, bigeye tuna, north Atlantic swordfish, and large coastal sharks stocks;
- Establishment of a foundation for international development of quotas and time periods to support rebuilding of bigeye tuna and north Atlantic swordfish;
- Limiting access to the commercial shark and swordfish fisheries; requiring both a shark and swordfish limited access permit to gain access to the commercial bigeye, albacore, yellowfin, and skipjack (BAYS) tuna pelagic longline fisheries;
- Implementing observer coverage on all HMS charter/headboat vessels;
- Prohibiting the use of pelagic driftnets in Atlantic tuna fisheries;
- Establishing a “School Reserve” category in the bluefin tuna fishery;
- Changing the fishing year for Atlantic tuna to June 1 through May 31;
- Requiring the use of a vessel monitoring system (VMS) for all HMS pelagic longline vessels and requiring gear marking for all HMS commercial net and longline fisheries;
- Changing the quota monitoring procedures for the Atlantic swordfish fishery including counting dead discards against the quota (subject to ICCAT adoption) and accounting for recreational fishing mortality;
- Requiring all vessel operators who must complete logbooks to complete and submit them within 48 hours of making a set but prior to offloading;
- Developing and implementing a bycatch and bycatch mortality reduction outreach strategy for recreational HMS fishery participants;

- Allowing retention of only those shark species known or expected to be able to withstand specified levels of fishing mortality;
- Changing the system of opening and closing shark fisheries and make seasonal quota adjustments;
- Reducing the recreational retention limit for sharks to one shark per vessel per trip with a minimum size of 4.5 feet and establishing an allowance of one Atlantic sharpnose shark per person per trip (no minimum size on Atlantic sharpnose sharks);
- Requiring that all sharks harvested by recreational anglers have heads, tails, and fins attached;
- Creating a new management unit of deepwater/other sharks and extending the anti-finning prohibition to this management unit;
- Counting dead discards and state landings after federal closures against federal quotas for all sharks;
- Dissolving the Shark Operations Team;
- Changing the quotas for pelagic and small coastal sharks and establishing separate quotas for porbeagle and for blue sharks;
- Requiring all charter/headboat vessels to obtain an annual vessel permit and, if selected, to submit logbooks for all HMS trips;
- Requiring registration of all HMS tournaments; and
- Establishing new permitting and reporting procedures for exempted fishing permits for shark for the purposes of public display.

Due to litigation, not all of the measures selected in the FMP were implemented.

Amendment 1 to the HMS FMP (68 FR 64621) was implemented in December 2003 and was supported by an EIS. Management measures selected in this amendment included:

- Aggregating the large coastal shark complex;
- Using maximum sustainable yield as a basis for setting commercial shark quotas;
- Eliminating the commercial shark minimum size;
- Establishing regional commercial shark quotas and trimester commercial shark fishing seasons;
- Adjusting the recreational shark bag and size limits;
- Establishing gear restrictions to reduce bycatch and bycatch mortality;
- Establishing a shark fishery time/area closure off the coast of North Carolina;
- Removing the deepwater/other sharks from the management unit;
- Establishing a mechanism for changing the species on the prohibited shark species list;
- Updating essential fish habitat identifications for five species of sharks; and
- Changing the administration for issuing permits for display purposes.

2.2.7 Fishery Management Plan for The Atlantic Billfishes

The Fishery Management Plan for the Atlantic Billfishes (53 FR 21501) was conjointly developed by five regional councils (Caribbean, Gulf, South Atlantic, Mid-Atlantic, New England) and implemented in October 1988 (53 FR 37765). The plan built upon the Preliminary Fishery Management Plan (PMP) for Atlantic Billfish and Sharks (43 FR 3818) that was published in January 1978. The PMP was supported by an EIS (42 FR 57716). The 1988 FMP defined the Atlantic billfish management unit to include *Istiophorus platyterus* (sailfish) from the West Atlantic Ocean; *Tetrapturus albidus* (white marlin) and *Makaira nigricans* (blue marlin) from the North Atlantic Ocean, and *Tetrapturus pfluegeri* (longbill spearfish) from the entire Atlantic Ocean, described objectives for the Atlantic billfish fishery, and established management measures to achieve those objectives. Primary management measures included:

- Defining OY in qualitative terms;
- A prohibition on the sale of Atlantic billfish, with an exemption for small-scale handline fishery in Puerto Rico;
- Establishment of minimum sizes for Atlantic billfish;
- A prohibition on possession of Atlantic billfish by commercial longline and drift net vessels; and
- Establishment of data reporting requirements

Amendment 1 to the Atlantic Billfish Fishery Management Plan was implemented in July 1999 (64 FR 29090). This amendment was supported by an EIS. Primary management measures included:

- Adjustment of minimum size regulations for Atlantic billfish;
- A prohibition on the retention of longbill spearfish;
- Maintenance of prohibitions on commercial possession and retention;
- Allowed removal of the hook from Atlantic billfish;
- A requirement for permits and logbook reporting for charterboats targeting billfish, if selected, as part of an HMS charter/headboat system;
- Implementation of billfish tournament notification requirements;
- Implementation of a June 1 to May 31 fishing year;
- Development and implementation of outreach programs; and
- An extension of the management unit for Atlantic marlins

3 Purpose of and need for action

3.1 Purpose of action

The purpose of this integrated FMP amendment is to address the deficiencies of the draft Comprehensive SFA Amendment that was disapproved in May 2002 and to modify, as needed, action taken in the Generic EFH Amendment to comply with the MSFCMA EFH requirements based on the findings of the Generic EFH EIS. Specifically, this amendment is intended to amend Council FMPs to accomplish the following:

1. Redefine as needed, based on FMP objectives, fishery management units and sub-units that reflect those stocks of fish that are best managed individually and those stocks of fish that are interrelated and best managed as a unit or in close coordination (Section 4.1);
2. Define biological reference points and status determination criteria for managed stocks (Section 4.2);
3. Reduce fishing mortality in federal fisheries to levels consistent with biological goals (Section 4.3);
4. Establish schedules and management measures, as needed, to end overfishing and rebuild Nassau grouper (*Epinephelus striatus*), Goliath grouper (*Epinephelus itajara*), queen conch (*Strombus gigas*), and Grouper Unit 4 (Section 4.4);
5. Provide additional protections to yellowfin grouper (*Mycteroperca venenosa*) in federal waters (Section 4.5);
6. Establish a standardized bycatch reporting program for federal fisheries (Section 4.6.1);
7. Minimize bycatch and bycatch mortality to the extent practicable in federal fisheries (Section 4.6.2);
8. Describe and identify EFH (Section 4.7.1);
9. Describe and identify HAPCs (Section 4.7.2);
10. Identify measures to prevent, mitigate or minimize to the extent practicable the adverse effects of fishing on EFH (Section 4.7.3); and
11. Define and describe the fishing communities of the U.S. Caribbean (Section 5.3).

More broadly, the purpose of this amendment and associated analyses is to review the best available scientific information on U.S. Caribbean fisheries and to take action, as needed, to ensure the sustainable stewardship of living marine resources for the benefit of the nation.

3.2 Need for action

The actions considered in this amendment are needed to bring the Council's FMPs for spiny lobster, queen conch, reef fish, and corals and reef associated plants and invertebrates into full compliance with new requirements added to the MSFCMA through the 1996 SFA. These requirements direct the Council to:

1. Assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, fisheries (MSFCMA §303(a)(3)) and specify objective and measurable criteria for identifying when a fishery is overfished (MSFCMA 303(a)(10));
2. End overfishing, rebuild overfished stocks, and prevent overfishing in fisheries that are identified as approaching an overfished condition (MSFCMA §304(e)(3));
3. Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery and implement conservation and management

- measures that minimize bycatch and bycatch mortality to the extent practicable (MSFCMA §303(a)(11));
4. Describe and identify EFH for managed stocks, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat (MSFCMA §303(a)(7)); and
 5. Consistent with conservation requirements, provide for the sustained participation of fishing communities and minimize adverse economic impacts to such communities to the extent practicable (MSFCMA §301(a)(8)).

As noted in Section 2.2.5, the Draft Comprehensive SFA Amendment and Generic EFH Amendment prepared by the Council and noticed in the *Federal Register* on January 25, 2002 (67 FR 3679), and on March 29, 1999 (64 FR 14884), respectively, were intended to meet these requirements. But a federal review determined that the Comprehensive SFA Amendment was inconsistent with the requirements of the 1996 SFA and NEPA. And a legal challenge from several environmental groups (*American Oceans Campaign et al. v. Daley et al.* Civ. No. 99-982 [D.D.C.]) has resulted in the Council revisiting action taken in the Generic EFH Amendment based on the findings of the newly completed EFH EIS.

The alternatives considered within this amendment to address the deficiencies of the Draft Comprehensive SFA Amendment are based on: (1) Comments received from the public on the Council's draft Comprehensive SFA Amendment, which was made available to the public in January 2002 through a *Federal Register* notice; (2) comments received from the public in response to the notice of intent to develop an SEIS to support this revised integrated FMP amendment, which was published in the *Federal Register* in May 2002 (67 FR 38060); (3) the advice of the SFA Working Group, composed of representatives from NMFS, the Council, state agencies, and interested stakeholder groups, and appointed by the Council to recommend options to achieve MSFCMA requirements in U.S. Caribbean fisheries; and (4) the discussion and recommendations of the Council at its 110th through 117th meetings in 2002 through 2005. Section 11.3 (Appendix B) provides more detailed information on scoping, on the members and activities of the SFA Working Group, and on the development of alternatives to address the deficiencies of the Comprehensive SFA Amendment..

The alternatives considered within this amendment to address the MSFCMA EFH mandates were developed and evaluated in the EFH EIS. As mentioned in Section 2.2.5, a revised EFH EIS was required due to a legal challenge from several environmental groups (*American Oceans Campaign et al. v. Daley et al.*, Civ. No. 99-982 [D.D.C.]). The settlement stipulation specified a schedule for completion of the EIS and implementation of subsequent amendments (if necessary) 17 months following a Record of Decision.